

CLAIMS:

1. An up-cut chop saw, comprising:

a frame having a surface adapted to support a workpiece;

a rotatable blade configured to cut workpieces by moving from below the surface of the frame to at least partially above the surface of the frame;

at least one motor configured to drive the blade;

at least one actuating mechanism operable to move the blade upward at least partially above the surface of the frame;

a detection system configured to detect one or more dangerous conditions between a user and the blade; and

a reaction system configured to stop the upward motion of the blade upon detection of a dangerous condition by the detection system.

2. The saw of claim 1, where the one or more dangerous conditions include accidental contact between a user and the blade.

3. The saw of claim 1, further comprising a guard structure configured to at least partially shield a user against accidental contact with the blade, and where the one or more dangerous conditions include contact between a user and at least a portion of the guard structure.

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4. The saw of claim 3, where the reaction system is configured to prevent operation of the actuation mechanism to move the blade upward if contact between a user and the portion of the guard structure is detected by the detection system.

5. The saw of claim 1, where the one or more dangerous conditions include contact between a user and a defined portion of the frame.

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6. The saw of claim 5, where the surface of the frame defines a slot adapted to allow at least a portion of the blade to pass through, and where the defined portion of the frame is adjacent the slot.

7. The saw of claim 5, where the reaction system is configured to prevent operation of the actuation mechanism to move the blade upward if contact between a user and the defined portion of the frame is detected by the detection system.

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8. The saw of claim 1, where the reaction system is configured to retract the blade below the surface of the frame upon detection of a dangerous condition by the detection system.

9. The saw of claim 1, where the actuating mechanism is further operable to lower the blade below the surface of the frame after the blade has been moved at least partially above the surface of the frame, and where the reaction system is configured to operate the actuating mechanism to lower the blade upon detection of a dangerous condition by the detection system.

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10. The saw of claim 9, where the actuating mechanism includes at least one fluid-actuated cylinder operable to raise and lower the blade.

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11. The saw of claim 9, further comprising at least one brace member coupled to move upward with the blade, and where the reaction system includes a brake mechanism configured to engage the brace member and stop the upward motion of the blade upon detection of a dangerous condition by the detection system.

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12. The saw of claim 1, further comprising at least one brace member coupled to move upward with the blade, and where the reaction system includes a brake mechanism configured to engage the brace member and stop the upward motion of the blade upon detection of a dangerous condition by the detection system.

13. The saw of claim 1, where the blade is electrically insulated from the frame.

14. The saw of claim 1, further comprising a rotatable spindle, where the blade is mounted on the spindle, and where the spindle is electrically insulated from the frame.

15. An up-cut chop saw, comprising:

a frame having an upper surface configured to support a workpiece;

a rotatable spindle;

a circular blade mounted on the spindle;

5 an actuating mechanism configured to move the spindle upward to raise the blade at least partially above the upper surface;

a detection system configured to detect accidental contact between a user and the blade; and

a reaction system configured to stop upward movement of the spindle and blade upon detection of contact between a user and the blade by the detection system.

16. The saw of claim 15, where the actuating mechanism includes a pneumatic cylinder.

15 17. The saw of claim 16, further comprising a control system configured to operate the pneumatic cylinder, and where the control system is configured to operate the pneumatic cylinder to move the spindle downward upon detection of contact between a
20 user and the blade by the detection system.

18. The saw of claim 15, where the actuating mechanism includes a hydraulic cylinder.

5 19. The saw of claim 18, further comprising a control system configured to operate the pneumatic cylinder, and where the control system is configured to operate the pneumatic cylinder to move the spindle downward upon detection of contact between a user and the blade by the detection system.

10 20. The saw of claim 15, where the reaction system is configured to retract the blade below the upper surface upon detection of contact between a user and the blade by the detection system.

15 21. The saw of claim 15, where the detection system is configured to detect contact between a user and a defined portion of the frame, and where the reaction system is configured to stop upward movement of the spindle and blade upon detection of contact between a user and the defined portion of the frame by the detection system.

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22. The saw of claim 15, further comprising a guard structure configured to at least partially shield a user against accidental contact with the blade, and where the detection system is configured to detect contact between a user and at least a portion of the guard structure, and where the reaction system is configured to stop upward movement of the spindle and blade upon detection of contact between a user and the portion of the guard structure by the detection system.

23. A woodworking machine having a frame and operative structure that includes a circular blade, where the operative structure is controllable to move the blade upward at least partially through the frame, the machine comprising:

means for detecting accidental contact between a user and the blade; and

means for stopping upward movement of the blade upon detection of such accidental contact between a user and the blade.

24. The machine of claim 23, further comprising means for retracting the blade away from the user upon detection of such accidental contact between a user and the blade.